

Table 4.10a
Water Quality Criteria for Dissolved Metals (at Critical Receiving Water Condition)

	Dissolved Metal Concentration, ug/L				
		Cadmium	Copper	Lead	Zinc
WA WQ Standards (Present Criteria)	Acute	1.58	6.10	16.40	49.90
	Chronic	1.14	4.46	0.64	41.60
EPA Revised Standards (Future Criteria) Applies only to cadmium	Acute	0.83			
	Chronic	0.13			

Table 4.10b
Estimate of Dissolved Metals in Runoff

	Units	Pollutant			
		Cadmium ^a	Copper ^b	Lead ^b	Zinc ^b
Particulate	%	43	49	86	54
Dissolved	%	57	51	14	46
Total Metals ^a	ug/L	5.0	22.3	21.9	129.8
Particulate Metals	ug/L	2.2	10.9	18.8	70.1
Dissolved Metals	ug/L	2.9	11.4	3.1	59.7

^a Source: Kayhanian M., Hollingsworth L., Sponberg M., Regenmorte L., and K. Tsay. Jan. 2002. Characteristics of Stormwater Runoff from CalTrans Facilities.

^b Source: FHWA. 1990. Pollutant Loadings and Impacts from Highway Stormwater Runoff. Volume I: Design Procedure. Publication No. FHWA-RD-88-006. April 1990. p. 15.

Table 4.10c
Summary of Dissolved Metals Composite Removal Efficiencies

AKART Treatment Alternative	Dissolved Metal Composite Removal Efficiency, %			
	Cadmium ^a	Copper	Lead	Zinc
Alternative 1 ^b	0	15	15	16
Alternative 2 ^b	0	15	15	16
Alternative 3	0	0	0	0
Alternative 4	0	0	0	0

^a Data not available.

^b Source: California Department of Transportation. 2002. California Department of Transportation BMP Retrofit Pilot Program. Report I.D. CTSW-RT-01-050.

Table 4.10d
Effluent Pollutant Concentrations for Dissolved Metals at Select Locations Using AKART Treatment Alternatives

Location of Pollutant Concentration	AKART Treatment Alternatives	Dissolved Metal Concentration, ug/L				
		Cadmium (present criteria)	Cadmium (future criteria)	Copper	Lead	Zinc
Stormwater Runoff ^a	Untreated	2.9	2.9	11.4	3.1	59.7
At Discharge Pipe to Spill Control Lagoon	1	2.9	2.9	9.7	2.6	50.2
	2	2.9	2.9	9.7	2.6	50.2
	3	2.9	2.9	11.4	3.1	59.7
	4	2.9	2.9	11.4	3.1	59.7
In Spill Control Lagoon (at end of WQ Treatment Storm event)	1	0.24	0.24	0.81	0.22	4.18
	2	0.24	0.24	0.81	0.22	4.18
	3	0.24	0.24	0.95	0.26	4.98
	4	0.24	0.24	0.95	0.26	4.98
At 10-ft Mixing Zone Boundary ^b (located 10 ft beyond lagoon boundary)	1	0.10	0.10	0.33	0.09	1.73
	2	0.10	0.10	0.33	0.09	1.73
	3	0.10	0.10	0.39	0.11	2.06
	4	0.10	0.10	0.39	0.11	2.06
At 100-ft Mixing Zone Boundary ^b (located 100 ft beyond lagoon boundary)	1	0.02	0.02	0.08	0.02	0.43
	2	0.02	0.02	0.08	0.02	0.43
	3	0.02	0.02	0.10	0.03	0.51
	4	0.02	0.02	0.10	0.03	0.51

Coding

Does not meet Acute Water Quality Criteria (dissolved metals)	X.X
Does not meet Chronic Water Quality Criteria (dissolved metals)	X.X

Notes

Alternative 1: Conventional Sweeping + Modified Catch Basin/Cleaning + Media Filtration Vault

Alternative 2: Conventional Sweeping + Modified Catch Basin/Cleaning + Catch Basin Filtration

Alternative 3: Conventional Sweeping + Modified Catch Basin/Cleaning

Alternative 4: High Efficiency Sweeping + Modified Catch Basin/Cleaning

^a Source: Kayhanian M., Hollingsworth L., Spongberg M., Regenmorte L., and K. Tsay. Jan. 2002. Characteristics of Stormwater Runoff from CalTrans Facilities.

^b Dilution assumes 6-lane bridge alternative conditions during WQ Treatment Storm Event where all stormwater is conveyed to spill lagoon.

Dilution factor of 12 in the spill control lagoon, 29 at the acute zone boundary, and 117 at the mixing zone boundary.